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Sung-Cheol Chang

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EXAMINER

NGUYEN, LEON VIET Q

ART UNIT

PAPER NUMBER

2611

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/584,437	<b>Applicant(s)</b> CHANG ET AL.	
	<b>Examiner</b> LEON-VIET Q. NGUYEN	<b>Art Unit</b> 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 December 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/22/06, 8/30/07</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

1. The information disclosure statement (IDS) submitted on 8/30/07 was filed after the mailing date of 8/30/07. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Double Patenting***

1. Claim 2 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 1. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1 and 2 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re claims 1 and 2, steps (a) and (b) appear to contradict one another. For instance, step (a) claims dividing carriers *into sub-channels* whereas step (b) claims dividing carriers into groups *having sub-channels*. It is unclear whether the carriers already have sub-channels or if they are divided into the sub-channels. For the purpose of this examination, the examiner will interpret steps (a) and (b) as being unrelated to one another and that each group is already divided into sub-channels prior to step (a).

#### ***Claim Rejections - 35 USC § 101***

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim(s) 1-14 is/are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. Supreme Court precedent<sup>1</sup> and recent Federal Circuit decisions<sup>2</sup> indicate that a statutory “process” under 35 U.S.C. 101 must (1) **be tied to another statutory category (such as a particular apparatus),** or (2) **transform underlying subject matter (such as an article or material) to a different state or thing.** While the instant claim(s) recite a series of steps or acts to be

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<sup>1</sup> *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).

<sup>2</sup> *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

Art Unit: 2611

performed, the claim(s) neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process. For example, the steps in independent claims 1 and 2 are not performed by any particular apparatus.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**2. Claims 1-9 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (US20030169681) in view of Ostrup et al (US6205336).**

Re claims 1 and 2, Li teaches a method for constituting a layered cell, which is for constituting a cell in an OFDMA mobile communication system (§0008), the method comprising:

(a) dividing L carriers having orthogonality into M sub-channels (fig. 2, each cluster is interpreted to be a sub-channel);

(b) dividing the carriers into N groups (fig. 6, groups 1-4) each having the M sub-channels (fig. 6, each cluster); and

(c) grouping the N groups by an arbitrary integer into K classes (§0107-§0108, Cells A-C are interpreted to be classes);

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Li fails to explicitly teach constituting a plurality of layered cells corresponding to the K classes. However Ostrup teaches constituting a plurality of layered cells (fig. 1, the three-layer cell structure) corresponding to an arbitrary number of K classes (col. 2 lines 54-59).

Therefore taking the combined teachings of Li and Ostrup as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the step of Ostrup into the method of Li. The motivation to combine Ostrup and Li would be to maintain a call at a higher level cell (col. 2 lines 47-50 of Ostrup), which would increase network resource utilization (col. 2 lines 1-3 of Ostrup).

Re claim 3, the modified invention of Li teaches a method wherein the respective K classes include the same or a different number of groups (it would be obvious to have either the same or a different number of groups since those are the only options. Furthermore, each cell in Table 2 of Li contains the same number of groups).

Re claim 4, the modified invention of Li teaches a method wherein the step (c) comprises:

Art Unit: 2611

sequentially allocating the groups to each of the K classes (Table 2 of Li), and allocating the  $(nK+k)$ -th group to the k-th class (Table 2 of Li, group 2 is interpreted to be the  $(nK+k)$ -th group and Cell A is interpreted to be the k-th class), when the respective K classes include the same number of groups (Table 2 of Li, Cells A-C contain the same number of groups).

Re claim 5, the modified invention of Li teaches a method wherein the step (c) comprises:

arbitrarily allocating the respective N groups to each of the classes ( $\P$ 0119 of Li, cluster allocation), when the respective K classes include a different number of groups ( $\P$ 0119 of Li, more diversity clusters is interpreted to be a different number of clusters compared to coherence clusters).

Re claim 6, the modified invention of Li teaches a method wherein the plural layered cells of the step (d) includes sector layers comprising a plurality of sectors classified by wireless areas (micro-cells 18-24 in fig. 1 of Ostrup), and a cell layer comprising a single cell corresponding to an overall cell area (umbrella cell 12 in fig. 1 of Ostrup).

Art Unit: 2611

Re claim 7, the modified invention of Li teaches a method wherein the step (d) comprises:

(d-1) allocating a capacity by sectors classified by wireless areas to map the classes to capacity (col. 4 lines 36-42 and 46-51 of Ostrup);

(d-2) generating the classes by as many as the number of sectors (col. 2 lines 54-59 of Ostrup, micro cells 18-24); and

(d-3) allocating each class by sectors to constitute the sectors (col. 2 lines 54-59 of Ostrup).

Re claim 8, the modified invention of Li teaches a method wherein the step (d) comprises:

(d-1) grouping the classes in a number of the sectors plus one (col. 2 lines 62-65 of Ostrup);

(d-2) allocating each class to a sector area (col. 2 lines 54-59 of Ostrup); and

(d-3) allocating the remaining class to a cell including the cell area (col. 2 lines 45-50 of Ostrup).

Re claim 9, the modified invention of Li teaches a method wherein the step (d) comprises:

Art Unit: 2611

(d-1) grouping the N groups into two classes (Table 3 of Li, cluster usage 1 and 2);

(d-2) allocating one class to the sector layers to allocate wireless resources for the classes equal in number to the sectors (col. 5 lines 14-25 of Ostrup); and

(d-3) allocating the other class to the cell layer (col. 5 lines 3-9 of Ostrup).

Re claim 13, the modified invention of Li teaches a method wherein the sector layers allow a use of wireless resources for a service having a low priority (§0050 of Li, the auxiliary clusters), the cell layer allowing a use of wireless resources for a service having a high priority (§0050 of Li, the basic clusters).

**3. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (US20030169681) and Ostrup et al (US6205336) in view of Eng (US6370153).**

Re claim 10, the modified invention of Lee fails to teach a method wherein the step (d-2) comprises:

using a channel encoding technique and a forward error compensation method for data transmission when a collision occurs at a boundary of the sectors.

However Eng teaches using a channel encoding technique (col. 14 lines 28-29) and a forward error compensation method (col. 14 lines 26-28) for data transmission

Art Unit: 2611

when a collision occurs at a boundary of the sectors (col. 19 lines 2-6, steps S23 and S24 in fig. 15).

Therefore taking the modified teachings of Li and Ostrup with Eng as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the step of Eng into the method of Li and Ostrup. The motivation to combine Eng, Ostrup and Li would be to reliably transmit control packets (col. 6 lines 3-11 of Eng).

**4. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (US20030169681) and Ostrup et al (US6205336) in view of Chang et al (US20030174678).**

Re claim 11, the modified invention of Li fails to teach a method wherein the step (d-3) comprises:

allocating wireless resources equally throughout the area of the cell layer to constitute a layered cell structure.

However Chang teaches allocating wireless resources equally throughout the area of the cell layer to constitute a layered cell structure (¶0085).

Therefore taking the modified teachings of Li and Ostrup with Chang as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention

Art Unit: 2611

was made to incorporate the step of Chang into the method of Li and Ostrup. The motivation to combine Chang, Ostrup and Li would be to reduce storage overhead (§0092 of Chang).

**5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (US20030169681) and Ostrup et al (US6205336) in view of Sandberg (US20020172307).**

Re claim 12, the modified invention of Li fails to teach a method wherein the sector layers allow a use of wireless resources for a user having a low movement speed, the cell layer allowing a use of wireless resources for a user having a high movement speed.

However Sandberg teaches a method wherein the sector layers allow a use of wireless resources for a user having a low movement speed (§0011, low speed mobile stations assigned to pico cells), the cell layer allowing a use of wireless resources for a user having a high movement speed (§0011, high speed mobile stations assigned to macro cells).

Therefore taking the modified teachings of Li and Ostrup with Sandberg as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the step of Sandberg into the method of Li and Ostrup. The motivation to combine Sandberg, Ostrup and Li would be to improve system capacity (§0011 of Sandberg).

**6. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (US20030169681) and Ostrup et al (US6205336) in view of Moon et al (US20050204251).**

Re claim 14, the modified invention of Li fails to teach a method wherein the sector layers allocate resources of the cell layer to a user requiring a high data rate in the vicinity of a sector boundary to allow a selection of AMC (Adaptive Modulation Coding) for high-speed data transmission.

However Moon teaches wherein the sector layers allocate resources of the cell layer to a user requiring a high data rate in the vicinity of a sector boundary (§0007, applying low-order modulations and low coding rate to a UE located in the cell boundary) to allow a selection of AMC (§0007).

Therefore taking the modified teachings of Li and Ostrup with Moon as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the step of Moon into the method of Li and Ostrup. The motivation to combine Moon, Ostrup and Li would be decrease an interference signal and improve average system performance (§0007 of Moon).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEON-VIET Q. NGUYEN whose telephone number is (571)270-1185. The examiner can normally be reached on Monday-Friday, alternate Friday off, 7:30AM-5PM.

Art Unit: 2611

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Leon-Viet Q Nguyen/  
Examiner, Art Unit 2611

/Mohammad H Ghayour/  
Supervisory Patent Examiner, Art Unit 2611